tions, a transit instrument by Dollond was used, which was 10 feet in focal length, and 4·75 inches aperture. For observing the comet, an eye-glass magnifying 86 times was employed.

A paper was then read, entitled, "On the supposed Powers of Suction of the Common Leech." By Thomas Andrew Knight, Esq., F.R.S., President of the Horticultural Society.

From observing the feebleness of the muscular force exhibited by the leech in its progressive movements through the water, the author was led to doubt its possessing the powers of suction that are so universally ascribed to it. A fact which came under his notice above sixty years ago, of considerable loss of blood from the leg following the bite of a vigorous leech, suggested to him the idea that the animal might become filled with blood simply by the injection of its body, in consequence of the impetus with which the blood is made to flow into it from the part bitten ;—an impetus which he imagines may be occasioned by the introduction of a peculiar kind of venom. He considers the irritation which often accompanies the bite of a leech as corroborating this hypothesis : he admits, however, that the inflammation excited by the sting of a bee or a wasp is attended with effects of a totally opposite kind; for, in that case, the blood, instead of having a tendency to flow, stagnates around the point where the poison has been instilled.

A paper was also read, entitled, "Experimental Researches in Electricity.—Fourth Series." By Michael Faraday, Esq., D.C.L., F.R.S., Fullerian Professor of Chemistry in the Royal Institution of Great Britain.

The author, while prosecuting his researches on electro-chemical decomposition, observed some phenomena which appeared to be referable to a general law of electric conduction not hitherto recognised. He found that an electric current from a voltaic battery, which is readily conducted by water, did not pass through ice : even the thinnest film of ice, interposed in the circuit, was sufficient to intercept all electric influence of such low intensities as that produced by the voltaic apparatus, although it allows of the transmission of electricity of such high intensity as that excited by the common electrical machine. The author ascertained that a great number of other substances, which are solid at ordinary temperatures, do not conduct the electric current from the voltaic battery until they are liquefied. Among these are potassa, protoxide of lead, glass of antimony, and oxide of bismuth; various chlorides, iodides, and sulphurets; and also many of the ordinary neutral salts with alkaline bases. In almost every instance the bodies subjected to this law are decomposable by electricity ; and their decomposition can be effected only when they are in a fluid state, and while they are conductors of electricity. The author inquires how far these two properties are connected together, or dependent the one upon the other ; but finds that several exceptions occur to any general proposition that he attempted to establish on this subject.

The general conclusions to which he is led from the experiments detailed in this paper are the following :—First, that all bodies conduct electricity in the same manner, but in very different degrees;—Secondly, that in some the conducting power is powerfully increased by heat, in others diminished, and this without any difference that has yet been discovered, either in the general nature of the substance, or of the influence of electricity upon it;—Thirdly, that there is a numerous class of bodies which, when solid, insulate electricity, and, when fluid, conduct it freely, and are decomposed by it; yet that there are many fluid bodies which do not sensibly conduct electricity of low intensity; and some that conduct it, and are not decomposed; —and, Lastly, that fluidity is not essential to decomposition. Sulphuret of silver is the only body yet known to be capable of insulating a voltaic current when solid, and of conducting it, without decomposition, when fluid. No distinction can as yet be drawn between the conducting powers of bodies supposed to be elementary and those known to be compounds.

The Society then adjourned over Whitsun-week to the 6th of June.

June 6, 1833.

FRANCIS BAILY, Esq., Vice-President, in the Chair.

Captain John Lihou, R.N., was elected a Fellow of the Society.

Professor Desfontaines, of Paris; Professor C. G. J. Jacobi, of Königsberg; Baron von Lindenau, of Gotha; Professor Meckel, of Halle; and M. G. de Pontécoulant, of Paris, were elected Foreign Members of the Society.

A paper was read, entitled, "An Account of a Second Series of Experiments on the Resistance of Fluids to Bodies passing through them." By James Walker, Esq., F.R.S., Civil Engineer.

The author, in a paper read to the Society in the year 1827, and printed in the Philosophical Transactions, gave an account of some experiments showing that the resistance of fluids increases in a ratio considerably higher than the square of the velocity, and that the absolute resistance is smaller than had been deduced from the experiments of the French Academy. In the present communication he states the results of his further inquiries on this subject. His experiments were made at the East India Docks, on a boat twenty-three feet long and six wide, with the stem and stern nearly vertical; one end being terminated by an angle of 42°, and the other of 72°; and the resistance to the boat's motion being measured by a dynamometer. The results are given in tables: and it appears from them, that in light vessels sharpness is more important in the bow than in the stern; but that the reverse is the case in vessels carrying heavy cargoes. From another series of experiments the author infers that the resistance to a flat surface does not exceed 1·25lb. for each square